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PREFACE.

THE Society having determined to publish their Transactions in yearly parts, for reasons fully explained in the advertisement prefixed to the first part of the present volume, the following prefatory notice of the articles rewarded will include the communications received by the Society during the last two years, and offered by them to the acceptance of the public.

To J. Peart, Esq., of Settle, in Yorkshire, the gold Ceres medal was voted, for a very detailed communication respecting the method employed by him of bringing into cultivation about seventy acres of waste land, forming part of Bentham Moor, a tract of 3000 acres of similar quality. The sagacity of Mr. Peart enabled him to discover, beneath the intractable boggy clay which formed the surface, an abundant deposit of marl : by the liberal use of this substance, combined with deep draining, and at the same time taking advantage of the accidental lowness of agricultural wages, he has succeeded, after five years' labour, in reducing to a system of regular tillage and

pasture, land that before had lain in a state of utter and hopeless neglect. The clear cost of the undertaking, including the purchase of the land, appears not to have exceeded about 10*l.* an acre.

The large silver medal has been voted to W. Blurton, Esq., of Field Hall, near Uttoxeter, Staffordshire, for his swing frame for turning and drying cheeses.

Among the agricultural products of this country, the next in importance as an article of human food, after grain and butcher's meat, is cheese. Any improvement, therefore, which, without injuring the quality of the article, brings it into a state fit for the market in a shorter time than usual, and with less labour, is well worthy of general adoption. Mr. Blurton's invention is of this kind. Having himself, in his own large dairy, fully proved its utility, he has liberally communicated the knowledge of it to his neighbours, and has sent a model and description of it to the Society, in order that by their means it may be freely offered to the public at large. The superior efficacy of this method, independently of the great saving of labour, is such, that cheeses thus treated are ready for market five or six weeks earlier than usual.

The thanks of the Society have been voted to Mr. J. Goss, of Okehampton, for an interesting letter on the severe lopping or pruning of trees ;

shewing, by actual experiment, how much such treatment diminishes the annual deposit of woody fibre.

Thanks have likewise been voted to Mr. J. Thomas, of Devandon Green, near Chepstow, for the communication of his method of freeing the branches of fruit-trees from the moss and lichens that in certain soils are very liable to infest them.

To the Earl of Macclesfield the thanks of the Society have been presented for a letter, accompanied by a specimen, shewing the great depth to which the roots of wheat have been found to penetrate, and therefore proving how much this valuable grain may be affected by the subsoil of the land on which it is grown.

The sum of five pounds was presented to Mr. C. Bush for a fruit-gatherer, consisting of a small net attached to the end of a long light pole, and having a jointed mouth-piece, by means of which a drawing motion is given to two blades that meet at an acute angle, and thus cut through the stem of the fruit, which then falls into the net.

In the class of Polite Arts, the large silver medal was voted to M. Felix Feuillet, of Paris, for his method of removing the impressions of wood blocks and metal plates, from the paper on which they were originally printed, to other paper. Valuable prints, the paper of which has become stained, mildewed, or otherwise injured, will pro-

bably be found capable of being restored by means of this process ; nor does there seem any reason to apprehend that, with a few modifications, it may not be applicable to engravings of considerable size, although the inventor appears hitherto to have practised it only on vignettes, and prints of small size, for illustrating books. In this application of it he has succeeded in an extraordinary degree, as the specimens left by him in the Society's possession demonstrate.

The silver Isis medal has been awarded to Mr. A. R. Burt, of Chester, for his portable easel. It is made of tinned iron pipe, whereby much strength is gained with little weight. The pieces are about eighteen inches long, and the whole packs in a box of small dimensions, the box itself serving as the base on which the canvass rests. It appears peculiarly adapted to the use of portrait-painters residing in the country, and of painters in oil from nature.

The large silver medal was presented to Mr. S. A. Forster, for an improved tail-piece for a violoncello. The invention consists, first, in dividing the tail-piece, by means of three longitudinal cuts, into four bars, united only at the lower end, and attaching the strings one to each bar ; secondly, in the material of the tail-piece, instead of wood, being soft hammered brass. By the above arrangement, each string being attached to

its own bar, the two form a continuous and distinct line, and therefore there is less interruption to the vibration.

The sum of five pounds was presented to Mr. J. Donaldson, for his handles for gravers and etching points. When we consider the combination of strength with dexterity that is required in cutting lines on copper plate, and the necessity on the part of the artist of feeling, as it were, at the end of his graver, that both the touch and the sight may mutually assist and correct each other, it will be evident that the form of the handle, and the manner of connecting it with the cutter, are by no means circumstances of trivial moment. Mr. Donaldson has contrived, in a very simple manner, to unite the cutter and handle firmly together, yet capable of being separated in an instant, in order to protract or withdraw the cutter, and thus to lengthen or shorten the entire instrument, as the nature of the work on which the artist is employed may require.

In the class of Chemistry, the gold Isis medal was presented to Mr. R. Cowling Taylor, F.G.S., for his models of part of the South Wales coal-field; of which one illustrates the geography, and the other the geology, of the district represented. The country included in the models occupies a surface of about eleven square miles north of Pontypool, and was surveyed by Mr. Taylor professionally, both above and below ground. The

beds here shewn consist of mountain limestone, covered by about 1600 feet of coal measures. The natural slope of the ground, from the tops of the hills to the valley in which the river Usk flows, being pretty much at right angles with the rise and dip of these beds, the whole series is exhibited at one view in a very striking and instructive manner, rendering it an excellent study to the young geologist as well as to the mineral surveyor. To Mr. Robert Jowett,* the silver Isis medal was voted, for his thermometer for ascertaining the temperature of acids and other corrosive liquors. It is composed of two glass tubes, one placed within the other, and blown at one end into a bulb, the cavity of which opens only into the bore of the inner tube, while it is welded all round externally to the bottom of the outer tube, so as to prevent the entrance of any liquid in the space between the two. The degrees are marked on a slip of paper fixed in this intermediate space, and are thus very easy to read off. It is far more commodious in use than the thermometer with a turn-up scale; and, from its cylindrical form, it may very easily be fitted to the stuffing-box of a boiler, in order to indicate the heat of the steam.

* Prematurely carried off, in the exercise of his profession in the medical department of the Polish armies.

To J. Dombrain, Esq., of Dublin, the thanks of the Society were voted, for a small block of white marble raised from a quarry belonging to that gentleman, in the county of Donegal. To the finer purposes of statuary it seems not to be applicable, on account of the coarseness of its grain, when compared with the marble of Carrara; but for flags for halls, and other similar uses, it seems to be very well adapted.

Thanks were likewise voted to Mr. F. Davis, of Coldbath Square, for a paper containing the results of experiments on the action of oxide of uranium as a mordant in calico printing.

To Mr. H. Wilkinson, of Pall Mall, was presented the gold Isis medal, being the premium offered for a method of so preparing oil as to render it applicable to clock-work and other pieces of delicate machinery, free from the inconveniences that attend the use of common oil. Mr. Wilkinson's prepared oil has been in use for the last five years by Mr. Barraud, of Cornhill, with a result so satisfactory as to have induced him entirely to discontinue the employment of any other. It is also equally efficacious in preventing articles of iron and steel from rusting, having long been used by the inventor for this purpose, in the package of fowling-pieces sent by him to Persia and elsewhere by sea.

In the class of Mechanics, the large silver

medal and twenty-five pounds were voted to Mr. Chancellor, of Dublin, for a clock escapement, of extraordinary simplicity, and great ease both of make and adjustment; and to Mr. J. Harrison, of Barton-on-Humber, the large silver medal and ten pounds were voted, for an escapement, which in principle bears some resemblance to one of Mr. Cumming's escapements: though complex, and consequently expensive, it is, however, more easy of adjustment than the spring escapements; and, from the account of its performance, applied to a church-clock, seems capable of great precision.

To the same ingenious artist (a descendant of Mr. Harrison the celebrated clock-maker) have been voted the silver Isis medal and five pounds, for his self-adjusting fly for turret-clocks. The use of the fly is to regulate the motion of the striking part, so that its momentum shall not exceed a certain rate. But the common apparatus for this purpose occasions the first stroke on the bell, and sometimes the second also, to be feebler than the rest. Mr. Harrison's improvement avoids this inequality, and therefore renders the striking of the clock more distinct.

Two large silver medals were respectively voted to Mr. W. Valentine, of Nottingham, and to Mr. C. Varley, of Charles Street, Somers' Town: to the former for his microscope for botanic dis-

sections; to the latter for his microscope for live objects. Mr. Valentine being engaged in a course of botanical dissections, and not finding any of the microscopes now on sale quite adapted to his purpose, has selected from various instruments those particulars of construction which best suited the object he had in view, and has likewise availed himself of the suggestions of friends, to whom he very frankly gives all due credit; and the result has been an instrument better adapted to the use of the botanical physiologist than any other at present extant.

In Mr. Varley's microscope the most prominent improvements are, an arrangement of two parallel bars, forming a kind of bridle or handle, with a universal motion, by means of which the stage, and therefore the objects on it, may be moved in any direction, so as to keep them continually in the field of distinct vision; a beautiful and simple movement peculiarly adapted to the examination of live animalculæ. Also a dark chamber under the stage, through the variable apertures of which the pencil of light is made to pass, of a diameter no greater than the power of the lens absolutely requires; a contrivance which, by cutting off all extraneous light, brings the pencil of rays in contact with absolute darkness, and thus causes the least difference of refractive

power in the parts of objects to render them distinctly visible.

The gold Isis medal and fifty guineas were presented to Mr. Andrew Ross, of Clerkenwell Square, for his dividing engine.

It is quite impossible by words to give any intelligible description of this important and beautiful machine; and this is the less to be regretted, as a very full description of it, amply illustrated by engravings, will be found in the body of this volume. The essence of Mr. Ross's invention consists in this, that whereas all other dividing engines retain for ever the original errors of their construction, Mr. Ross's contains within itself the means of correcting those errors, whenever they may be found out, as well as those that arise from the unequal wearing of the metal.

Four rewards have been voted for inventions relating to shipping and naval affairs. To the Rev. Griffin Stonestreet, of Halton, near Hastings, for his tide semaphore, the gold Isis medal; to Mr. J. Bothway, R.N., for his mode of securing the lower yards of ships of war, the large silver medal; to Commander Hood, R.N., for his rocket-staff, the large silver medal; and to Mr. Alfred Canning the large silver medal, for his life-raft.

At most ports which cannot be entered at low water, a flag in some conspicuous station is

hoisted when the tide has risen so as to afford on the bar or in the harbour eight or ten feet water, as the case may be, and is kept displayed till, by the fall of the tide, the water is reduced to the same depth that it was when the flag was first hoisted. A flag in these circumstances indicates when a vessel of the minimum draft of water may safely enter the harbour; but as it shews neither the actual depth of water at any particular time, nor whether the tide is rising or falling, it may well happen, that a vessel making for the harbour just before the flag is lowered may get aground, or, from fear of such an accident, may not choose to stand for the harbour, though the actual depth of the water may be such as to make it quite safe. The object of Mr. Stonestreet has been to substitute for this vague, and sometimes deceptive indication, a method which shews, not only the depth of water in feet at any particular time, but also whether the tide is falling or rising.

Mr. Bothway's invention is peculiarly applicable to men-of-war; and has been adopted in fitting out some line-of-battle ships at Plymouth. It is not of a nature to admit of being rendered intelligible by mere words.

Commander Hood's rocket-staff is for the purpose of ensuring the vertical ascent of signal rockets, either from the deck or rigging of a ship, or from any other situation. It consists essenti-

ally of a metal tube open at both ends to receive the rocket and its staff, with a ledge inside, on which the rocket hangs. It is discharged by means of a gunlock on the outside, and receives its direction in rising through the tube.

Mr. Canning, like most of the practical seamen who have preceded him in inventions of this kind, employs, in the construction of his raft, spars, gratings, capstan-bars, casks, and such other articles as must of necessity be on the deck of every vessel, but combines them in a new manner; his object being to give such a degree of buoyancy to his raft as to raise the persons on it habitually out of the water. Although neither of the rafts, of which models have been laid by him before the Society, have been used in any case of actual shipwreck, yet he has himself made trial of both of them with signal success, in very stormy weather, both at Cherbourg and in the island of Jersey.

Three inventions are recorded in the present volume the object of which is to afford the means of escape to the inmates of a house on fire. To the Chevalier Aldini, of Milan, the gold Isis medal, for his armour of wire gauze lined with asbestos, or with woollen cloth soaked in a solution of alum, which will enable the wearer to traverse a sheet of flame, during fifteen or twenty seconds, without injury : to Mr. J. Braidwood, of

Edinburgh, for his chain-ladder, the large silver medal; and a similar reward, with the addition of ten pounds, to Mr. J. Henfrey, for his fire-escape, which consists of a jointed metallic ladder, very ingeniously constructed, so as to be flexible enough to be rolled round an axis, and thus to pack into a small compass, while, when extended, it has sufficient stiffness for the use to which it is applicable.

The silver Isis medal was presented to Mr. Reilly, of Finsbury Place, for a graduating pack-saddle, the tree of which being jointed on the ridge, allows it to be adjusted with much greater accuracy to the back of any particular animal than can be done in the ordinary saddle.

To Mr. T. R. Yare, of Dean Street, Soho, has been awarded the large silver medal, for a muzzle for crib-biting horses. This muzzle, while it allows the horse to eat and drink, prevents him from biting the manger. It is therefore effectual while on, and offers a fair chance of curing the animal if applied in time, provided the habit have arisen from mere imitation, and not from any disease.

Improvements in tools, whereby greater precision or facility in their operation is produced, have always been favourably regarded by the Society. On the present occasion, eight such articles are offered to the public use.

The large silver medal has been voted to Mr. Hilton,* of Regent Street, for a very beautiful conical hollow tool for boring the bung-holes of casks truly circular and of any dimensions.

The silver Isis medal and five pounds have been voted to Mr. Samson Travis, of Grays Street, for an improved dowel box for boring sashes, by means of which the pieces of which they are composed may be put together with greater expedition and accuracy than usual.

The sum of five pounds was presented to Mr. W. Dungey, of New Compton Street, for an improved carpenter's holdfast, the peculiarity of which consists in an adjusting screw, so to regulate the pressure as to prevent the work held by it from being crushed or otherwise injured.

The silver Isis medal and five pounds have been voted to Mr. T. Lowthorp, for his emery cloth; a great improvement on the emery paper hitherto employed, not only on account of the increased durability obtained by substituting calico for paper, but because it continues much longer in that half-worn state in which it is so peculiarly useful to gun-smiths, lamp-manufacturers, and workers in metal in general.

The silver Isis medal and five pounds were

* By the recent death of this gentleman the Society have been deprived of a very useful and active member.

presented to Mr. J. Bassett, of Birmingham, for his method of bending pipes of tin-plate, and making laps or folds in the same material. The former of these objects is effected by filling the pipe with hard solder, and then bending it by means of two rings of soft solder. For making laps or folds in tin plate, he employs an iron cylinder, with longitudinal cuts in it adapted to the various proportions of the folds that different works require. The edge of the tin-plate being placed upright in the cut, the cylinder is turned so as bring the plate sharply against the jaw of the block which contains the cylinder, and thus gives a perfectly straight bend to the plate, more expeditiously and more accurately than can be done by a hammer.

The sum of five pounds was voted to Mr. Philip Watt, Fore Street, Lambeth, for an instrument for piercing sheets for bookbinders. In preparing printed sheets for being stitched, they are first folded, then laid one on another, and pierced at the hinder margin with three holes, by means of an awl, through which the thread is afterwards drawn by a needle. The number of sheets that can be pierced at once depends, of course, in a great measure, on the strength of the person employed in this work, which, as it generally falls to the lot of women, is found often to be a very laborious business. Mr. Watt's

machine was invented to save the greater part of the personal labour, and to perform the work with more expedition. As many sheets as would make a thick pamphlet are by this means pierced at once, with a very moderate exertion of power.

The silver Isis medal was voted to Mr. Parson, Great Guilford Street, for his improved slide-rest for a turning lathe. This consists in placing the tool in a perforated cap, capable of turning round in the circular base on which it stands, and thus allowing the tool to be set at such a degree of angular obliquity as may best suit the work that is in hand. Although a simple improvement, it is one of considerable importance, and can only be adequately estimated by a practical turner.

The thanks of the Society were presented to Mr. James Jones, Well Street, for a very simple and effectual double driver for a lathe chuck.

The large silver medal was voted to Mr. James Braby, Duke Street, Stamford Street, for his machine for weighing coals in sacks. The introduction of a bill into the late parliament for the sale of coals in the metropolis by weight instead of by measure, was the occasion of this invention. Its principle is that of the steel-yard; and with one fixed and one movable weight, it will weigh sacks of coals considerably above or below the average weight, and, after a sack has been

emptied, the weight of it is found by the movable weight alone. The whole machine packs up in a box of small size, which is carried beneath the tail of the waggon, and when in use is supported by a horizontal sliding bar attached to the framework.

The large silver medal was voted to E. S. Graeff, Esq., Southampton Place, Euston Square. A poor woman, a tenant of this gentleman, had the misfortune to lose one of her hands, and was thereby disqualified for her usual occupation of needle-work. Mr. Graeff, compassionating the irksomeness of her situation, contrived for her a set of instruments, very simple, by means of which she is now able to perform all kinds of plain work with ease and despatch. The needle is held in the hand which yet remains, and therefore the instruments are intended only to retain the various kinds of work in positions as nearly as possible resembling those in which they are ordinarily held.

To Mr. J. Goode, of Hereford, the large silver medal was voted, for a very clever application of the siphon to feeding a tank with water from a higher level, in proportion as the water already in the tank is pumped out.

The large silver medal was likewise voted to Mr. J. Ritchie, F.R.S., for his photometer, or instrument for measuring the relative intensity of

light given out by any two substances in a state of combustion.

The sum of five pounds has been voted to Mr. J. Roberts, for his reflectors to the miner's safe lamp. These reflectors are two in number, an interior and exterior one, whereby the rays, in a concentrated state, may be thrown forty feet or more, and afford a better light to the miner than he could obtain from the lamp itself, if close to him.

An interesting and useful paper on welding and working iron and steel has been communicated by Mr. C. Varley.

Of surgical apparatus, the Society, under the advice of their professional members, have awarded a large silver medal to Stafford Benson, Esq., of Jewin Street, for his bed for reducing dislocations, which is at present in use at Bartholomew's hospital; a large silver medal to J. C. Jerrard, Esq., of Honiton, for his bed for invalids, of which, perhaps, the chief novelty consists in a simple method of changing its position from horizontal to any necessary degree of lateral obliquity; a silver Isis medal to C. Verrall, Esq., of Seaford, for his prone couch, whereby patients are enabled to repose face downward, a position which, in certain cases, contributes both to their ease and to their cure; and a similar medal to Mr. Bunney, of Lower Eaton Street, for his surgical belts.

In the class of Manufactures, the sum of ten pounds was presented to Mr. S. Dean, an ingenious silk-weaver, of Bethnal Green, for his proposed machine for punching pattern cards for the Jacquard or Lyonese loom, and the silver Isis medal and ten pounds for his improved silk-loom. To Mr. W. Jennings, a machine maker, of the same place, were presented the large silver medal and fifteen pounds, for sundry improvements made by him on the Jacquard loom.

This is the second improvement in the machinery of the Lyonese loom for weaving figured silks which has been given to the public by the Society; and it may not be uninteresting, on this occasion, to bring into one point of view the successive ameliorations which the art of silk-weaving has received, and particularly those which have been described in the preceding volumes of our Transactions.

It has appeared useful to do this, notwithstanding the various existing accounts of the silk manufacture, among which may be distinguished the elegant treatise forming part of Dr. Lardner's *Cyclopædia*, because all these have been published by individuals, who could not possibly expend the sums on drawings and engravings required for the full illustration of such intricate machinery; but which the Society has, in the course of a long series of years, been enabled to do in the most ample manner.

Before referring to the subject of weaving, it may be well to state that the Society's *Transactions* comprise the most elaborate, and perhaps the best, accounts of all the previous operations, from the breeding of the worms up to the period that the silk comes into the hands of the weaver. On the first of these, and on preparing the silk from the cocoons, we may confidently refer to the long and interesting paper of Mr. Stephenson, in Vol. XLIII. ; and as regards the subsequent process of combining the original filaments to form others of greater strength, a description will be found in Vol. XLI., of the most improved engine for what is called *throwing*, after which the silk is ready for the weaver.

The distinction between plain and figured weaving is fully pointed out in the description of Mr. Richards' invention, in Vol. XL. of the *Transactions* ; and premising this to be understood, it is necessary only to state, that the complicated and varying operations required to produce *figures*, were, prior to the year 1807, effected by a boy or man in constant attendance on the weaver, who, by means of previously arranged and very numerous cords, raised or depressed in a certain order those parts of the harness required to produce the pattern.

The expense, and, above all, the inconvenience of subjecting the weaver to the costly, and sometimes careless, services of a second person, were

long and severely felt; and it was not till the year just named that Mr. Duff provided the first mechanical substitute for the weaver's attendant. This machine, called a *draw-boy*, from the name of the person with whose labours it dispensed, is described in Vol. XXV. of the *Transactions*; an improvement on it, by Mr. Sholl, is described in Vol. XXVIII.; and further improvements made in 1820 and 1821, by Mr. Richards and Mr. Hughes, are, together with most elaborate details of the whole of the best loom then known in England, given in Vol. XL.

These were the latest advances made on the original invention of Mr. Duff. About this time, the continued peace of Europe, and the increasing intercourse between England and France, enabled the manufacturers of the two countries to become acquainted with the machinery and processes employed by the other; and it was soon discovered that the French had been for some years in possession of a loom, invented by a M. Jacquard, which was almost as much superior to the English *draw-boy* as that was better than the living agent which it had superseded. The first person to take advantage of this discovery was Mr. Stephen Wilson, an eminent manufacturer of the city of London, to whose disinterested enterprise and exertions the country is much indebted, from the circumstance that the greater height of the

French, as compared with the English loom, required new and very lofty buildings to be erected for its introduction. The requisite expense to make the experiment was, nevertheless, hazarded by Mr. Wilson; and the result, as regards the general benefit of the trade, fully justified his expectations; so complete, indeed, has been its success, that in a very few years the old *draw-boy* will probably be unknown.

The general use of the Jacquard loom has hitherto been much impeded by its great height, as already mentioned, which, though easily overcome in a single instance, presents a serious obstacle to its adoption by so numerous a body of persons as the silk-weavers, inhabiting buildings adapted only to the existing apparatus. The improvement, therefore, made by Mr. Jennings, consisting in a reduction of its height to the average of English working rooms, will, if it prove as successful as the Society hopes, lend a most valuable assistance towards its general introduction. The alteration in question is described in the present volume, and the accompanying engraving, together with that of the invention of Mr. Hughes, in Vol. XLVII., will convey a tolerably complete idea of the nature of the Jacquard machinery. It consists, mainly, of an indefinite series of cards, variously punched with holes, which revolve round a square bar, and, coming successively in contact

with the machinery prepared for them, affect as variously the harness of the loom. To change, therefore, the series of cards, is alone required to change the pattern of the work; and to resume an old pattern, it needs only to attach the cards which had formerly been employed. There is scarcely any limit to the number of cards which shall form the series, and of course as little limit to the length and variety of the pattern. The labour of causing such an endless band of cards to revolve is the smallest conceivable, their expense is trifling, and their durability great. The contrivance, in every respect, does the highest honour to its inventor; and though it may probably receive some slight modifications, it is likely to maintain for many years its important place among the aids to manufacturing industry.

In addition to the subjects already named, the *Transactions* of the Society are copious in details of all the other branches of this important art. In Vol. XL. is the most perfect description of the engine loom used at Coventry for weaving figured ribands; together with an account of an apparatus for producing patterns totally different both from the English *draw-boy* and the French Jacquard loom. In the present volume is an engraving and description of a greatly improved *power-loom* for weaving delicate fabrics, invented by Mr. George White, of Glasgow, to whom the

Society voted their large silver medal and twenty-five pounds; an application which has hitherto been retarded by the uniform, and therefore sometimes excessive, violence of the machinery. One of the first models of a power-loom was presented to the Society above forty years since, and is now contained in its repository, together with numerous other models illustrating the performance of subordinate operations, such as weaving fishing-nets and tartan hose, covering wire with silk, cutting silk shag and velvet, and many more, which will be found fully described in the volumes of *Transactions* for the years in which they were respectively presented to the Society.

The silver Isis medal was voted to Mr. D. B. Rolt, of Friday Street, Cheapside, for his specimen of silk obtained from the garden spider (*Aranea diadema*). The specimen of silk which accompanied Mr. Rolt's communication, and has been placed in the Society's repository, was wound off from twenty-four spiders in two hours; its length is estimated at about 18,000 feet: its colour is white, with a very high and almost metallic lustre. The Society are of opinion that it will never be possible to employ spiders' silk, beautiful as it is, in any profitable manufacture; but have thought proper to confer a reward on this gentleman for his communication, as forming

an interesting addition to the natural history of the spider.

In the class of Colonies and Trade, the large silver medal was voted to Lieut. H. Lister Maw, R.N., for pigments and other articles collected by him in South America, on the banks of the Marañon and its tributary rivers, and presented by him to the Society. The activity and liberality of this enterprising officer have put the Society in possession of several new articles, some of which have been examined, and others are still in a course of investigation. A very fine purplish red fecula, from the leaves of the *Bignonia chicha*, is perhaps the most promising as a pigment; but the Society have not yet succeeded in applying it to the uses of the dyer.

The large gold medal, being the premium offered, was voted to Sir J. Jamison, President of the Agricultural Society in the colony of New South Wales, for his successful method of extirpating the stumps of trees in the conversion of natural forest into arable or pasture land. On soils favourable for this operation it may be performed with unprecedented expedition and at small expense; and has already been applied with perfect success to clearing about 600 acres of forest in that colony.

The gold Isis medal was voted to James Henderson, Esq., late His Majesty's Consul General

in the State of Colombia, for specimens and a description of a species of Peruvian bark, richer in the active principles of this medicinal drug than the kinds heretofore brought to market. It is very abundant in the neighbourhood of Pitayo, and is now beginning to be an article of commerce.

The large gold medal, being the premium offered, was voted to Mr. David Lockhart, botanical gardener to the government of Trinidad, for the successful culture of nutmegs and mace in that colony.

The samples sent by the candidate, amounting to 20lbs., were placed in the hands of one of the principal spice-brokers of the city of London. They appear to be of two sorts, the round and oblong. The former would meet with a ready sale at the same current prices as East Indian nutmegs of the best quality; the latter, on account of their form, (although very oily and of good flavour), would be reckoned inferior in the market to the others by about 15 per cent. It will, therefore, be wise in Mr. Lockhart to replace continually the trees bearing oblong nuts by those which produce round ones; and this being done, there seems no reason why Trinidad should not become as celebrated for this rich spice as the Island of Banda, in the Indian Archipelago.

In page 199 is inserted a notice respecting a

collection of woods made by Dr. Wallich, in Nipal and in the Burmese territory, which, with the consent of the Directors of the East India Company, were sent to the Society for examination. An alphabetical catalogue of this interesting collection will be found at page 441, accompanied by notices of the uses to which the more important kinds are applied in their native countries.

The Committee have likewise availed themselves of the liberality of the Secretary, and have selected from the Illustrations read by him before the Society, those on Pottery and Porcelain for publication in the present volume.